K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

	SUMMER-2023		
	Exam Seat No.:		
	Academic Year:2022-2023	Semester: II	
	Name of Programme: MCA	Pattern:2022	
	Name of Course: Elective I: C: Augmented Reality and Virtual Reality	Course Code: MCA222003C	
	Max. Marks:60	Duration:2.30	

	Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use. 1. This question paper contains 2 pages. 2. Answer to each new question is to be started on a new page. 3. Assume suitable data wherever required but justify it. 4. Draw the neat, labelled diagrams, wherever necessary. 5. The last columns indicate the Course Outcome and level of Blooms Taxonomy of the Question/sub-question	

Question No. 1 Attempt following Question.

1a)	Explain the term animation. Describe in detail types of animation.	(6)	CO2

Question No. 2 Attempt following Question.

2a)	Describe the benefits of Augmented Reality for your business or organization.	(6)	CO1

Question No. 3 Attempt following Question.

3a)	Showcase the difference between Maker based and Makerless augmented reality and also explain the 4 categories of markerless augmented reality?	(8)	CO4

OR

3b)	What is the definition of Matrix multiplication and perform 2 X 2 and 3 X 3 matrix multiplication in AR?	(8)	CO4
3c)	Illustrate the process of marker-based camera pose identification and its applications in augmented reality.	(8)	CO4
	OR		
3d)	Predict the advancements in devices and components of Augmented Reality and their potential impact on user experiences.	(8)	CO4

Question No. 4 Attempt following Question

4a)	Examine the importance of key elements of virtual really.	(8)	CO3
	OR		
4b)	Determine the role of haptic devices in Virtual Reality and explain how they enhance the user's sense of immersion and interaction within the virtual environment.	(8)	CO3
4c)	Determine the psychological factors that contribute to the sense of presence and immersion in virtual reality experiences.	(8)	CO3
	OR		
4d)	Examine use of different display technologies in virtual reality, such as head-mounted displays (HMDs), cave automatic virtual environments (CAVEs), or projection-based system.	(8)	CO3

Question No. 5 Attempt following Question

5a)	Illustrate the role and functionality of trackers in virtual reality systems.	(8)	CO5
	OR		
5b)	Analyse the different interactive techniques, such as hand gestures, voice commands, or eye tracking, on user engagement and immersion in virtual reality.	(8)	CO5
5c)	Illustrate the different types of sensors in virtual reality applications.	(8)	CO5
	OR		
5d)	Show the different approaches to simulating object grasp in Virtual Reality.	(8)	CO5